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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,884	10/31/2003	Richard A. Haight	YOR9-2000-0571-US2	2010

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EXAMINER
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PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 07/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/698,884	Applicant(s) HAIGHT ET AL.	
	Examiner Marianne L. Padgett	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/31/03</u> . | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 1762

1. The disclosure is objected to because of the following informalities: the first page of the specification requires updating to show the patent number of the parent case.

Appropriate correction is required.

2. The IDS filed with the application that list most references cited in the parent is made of record, as are the US patents to Kaitila et al and Effenberger, which were cited as of interest in the parent case.

3. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As phrased, it is unclear in claim 10 whether it is the substrate or the film, which is "a few monolayers thick". As claim 4 may be considered to inherently encompass the effect of claim 10, if film is being referred to, so the latter would make logical and structural sense, and would be supported. Hence, it is probable that the thickness was intended to refer to the film, however the claim language should be unambiguous.

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-25 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-24 of U.S. Patent No. 6,656,539. Although the conflicting claims are not identical, they are not patentably distinct from each other because the present claims are broader than those of parent case, as all the limitations of the present independent claims 1 or 23 are contained in the patent's claim 1, where the patents 2 "wherein..." limitations are divided between this case's independent claims 1 & 23, and are thus obvious variations on the patented claims. Also, the dependent claims of this case are also found in the parent, thus their limitations are also covered.

6. Claims 1-6, 8-14 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Polanyi et al (6,319,566), alone or in view of Morishige (4,711,790).

Art Unit: 1762

It is noted that claim 1, as presently written is identical to claim 1 of the parent case's amendment B (10/22/02), hence the rejection applied thereto in the parent, is repeated below. Also, as was noted in the parent, while claim 1 requires photochemical decomposition within the deposited film, it does not exclude other mechanisms from taking place, such as thermal decomposition concurrently taking place.

Polanyi et al teach molecular or atomic patterning of substrate surface that may be photo induced (lasers, such as 193 nm) on a femtosecond time scale, and may employ gases such as  $\text{Mo(CO)}_6$  to absorb on the surface and deposit metal or the like in pattern. See the abstract; column 4, lines 32-53; column 7, lines 1-15 and 52-62; column 9, lines 12-22; column 13, lines 20- column 14, lines 40+; column 15, lines 1-45, and column 16, lines 6-51 ( $\text{Mo(CO)}_6$ ). Polanyi et al's adsorbate may come from gaseous compounds, and forms a film before any irradiation takes place on the adsorbate monolayer, where and when photodissociation is taught to occur. This sequence explicitly excludes photolytic decomposition of gaseous precursors occurring. No thermal decomposition is disclosed; hence there is no expectation that such is involved in the photodissociation process.

Polanyi et al differ by not discussing whether or not their gases may include carrier gases, but since use of carrier gas is a standard procedure depending on the vapor characteristics of the precursor gases involved, it would have been obvious to one of ordinary skill in the art to use such conventional techniques depending on the precursor employed and its vaporization characteristics and transport properties. Alternately, Polanyi et al teach the metal carbonyl  $\text{Mo(CO)}_6$  in column 16, and Morishige shows that such gases as  $\text{(Cr(CO)}_6$  are used with carrier gas, hence it would have been obvious to one of ordinary skill to employ such procedures with

Art Unit: 1762

the general suggested precursor materials of Polanyi et al, because of its demonstrated effectiveness with analogous gases. Note in column 9, while 193 nm excimer lasers are suggested, use of visible light as an alternative is also taught, so the wavelength is chosen by material treated, which is not specified for any of the particular wavelengths claimed, so had no specific effect for the claims as written.

7. Claims 23-24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Polanyi et al, optionally in view of Morishige as applied to claims 1-6, 8-14 and 20-22 above, and further in view of Trushin et al ("Femtosecond Dynamics...").

While Polanyi et al teach the irradiation process is a femtoscale process, they do not ever actually disclose what pulse width their lasers employ.

Trushin et al discloses the femtosec dynamics of the metal carbonyl  $\text{Cr}(\text{CO})_6$  from UV decomposition, with the introduction relating to metal carbonyls (Cr, Mo, W) in general. The experimental section on page 4310 shows the use of 130 fsec UV laser (267 nm) pulses to cause the carbonyls' dissociation, but this research paper does not discuss the use of these dissociated metal organic precursors for any particular purpose.

It would have been obvious to one of ordinary skill in the art, that as Polanyi et al's pulsed laser deposition process is on a fsec time scale, and that Trushin et al shows pulsed lasers dissociating carbonyls as taught by Polanyi et al on the taught time scale by using 130 fsec pulses, that such pulse duration would have been expected to be effective in the deposition process of Polanyi et al, as they are consistent and complementary with the teachings therein, supplying a needed parameter that is not directly discussed but is suggested by the taught fsec time scale.

Art Unit: 1762

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Polanyi et al, optionally in view of Morishige as applied to claims 1-6, 8-14 and 20-22 above, and further in view of Baum et al (5,407,710), optionally further considering Baum et al (206).

Polanyi et al does not specify dimethyl gold trifluoro acetylacetonate as a deposition material, but the deposition materials cited therein are taught only as an examples, and the process is taught not to be limited thereto (column 15, lines 65- column 6, line 51), thus it would have been obvious to one of ordinary skill in the art to use other known metal deposition gases other than the suggested example, as illustrated by Baum et al (710) who shows the equivalent use of  $\text{Mo}(\text{CO})_6$  suggested in Polanyi et al with the claimed gold compound, i.e. Baum et al (710) shows that the claimed dimethyl Au trifluoroacetylacetonate can be equivalently used for photo-deposition with metal carbonyls ( $\text{Mo}(\text{CO})_6$ ), hence one of ordinary skill in the art would have been motivated to employ alternative precursors as taught in Baum (710) in the primary reference techniques with expectation of success.

Baum et al (206) is of interest for providing further motivation or expectation/evidence of effectiveness by teaching overlapping laser and/or wavelengths used with the process of Baum et al (710).


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on Monday-Friday from about 8:30 a.m. to 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1762

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M.L. Padgett/dh  
July 1, 2004  
July 27, 2004



MARIANNE PADGETT  
PRIMARY EXAMINER